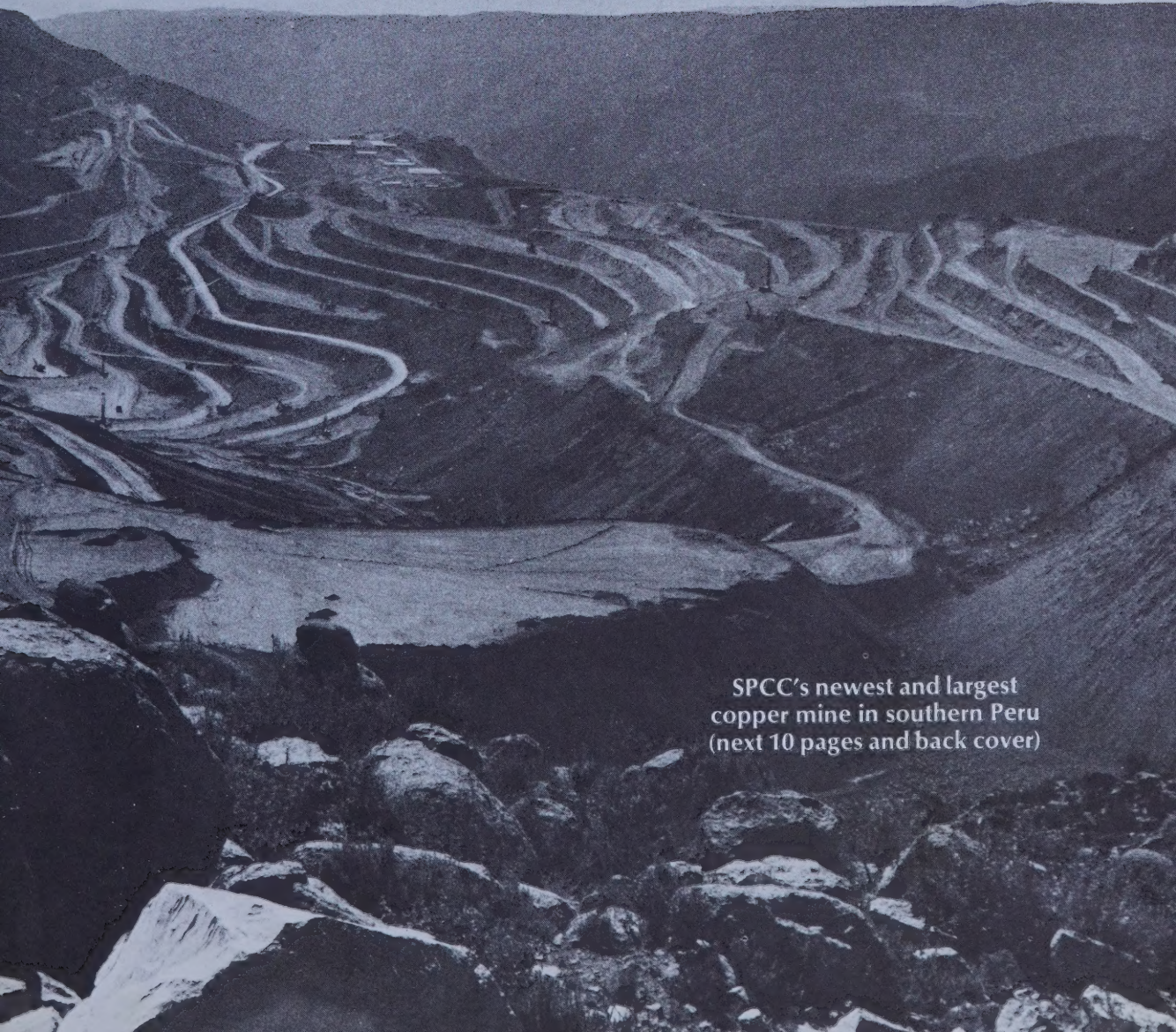


ASARCO NEWS

SPRING 1977

AR48

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SPCC's newest and largest
copper mine in southern Peru
(next 10 pages and back cover)



Tunnel portal

Carpenter shop

Primary crusher

Ore train

Fine ore storage

Concentrator

Secondary/tertiary crushers

Mudflings thickener

Reclaimer thickener

Filter plant

Concentrate thickener

Mudflings thickener

Concent

Electrical switchgear

Pipe fabrication shop

TO CUAJONE MINE





Botiflaca concentrator (left) is located $4\frac{1}{3}$ miles west of mine (below). Engineer (standing, below right) uses back-pack radio to operate ore train.

The copper giant in southern Peru

It took \$1 billion, 21 years to create big SPCC complex

Not unlike other offspring, Southern Peru Copper Corporation is rivaling its parents in at least one respect — its physical size. With operations extending over some 2,852 square miles from sea level to 14,000-foot altitudes in Peru, SPCC is involved in an area larger than the state of Delaware (2,057 square miles) in which it was incorporated by Asarco on December 12, 1952.

It was only 21 years ago, however, that SPCC became a physical as well as a corporate entity, resulting from the exchange of SPCC stock for cash and interests owned in Peruvian mining concessions by Asarco and two other corporations. A third com-

pany contributed cash only.

Presently SPCC is owned by Asarco (52.3 percent); Cerro-Marmon Corporation (20.7 percent); a subsidiary of Phelps Dodge Corporation (16.3 percent); and Newmont Mining Corporation (10.7 percent).

Included in the 1955 transaction were copper deposits in the Toquepala and Cujone *quebradas* (canyons) which were destined to become two of the greatest mines in the world.

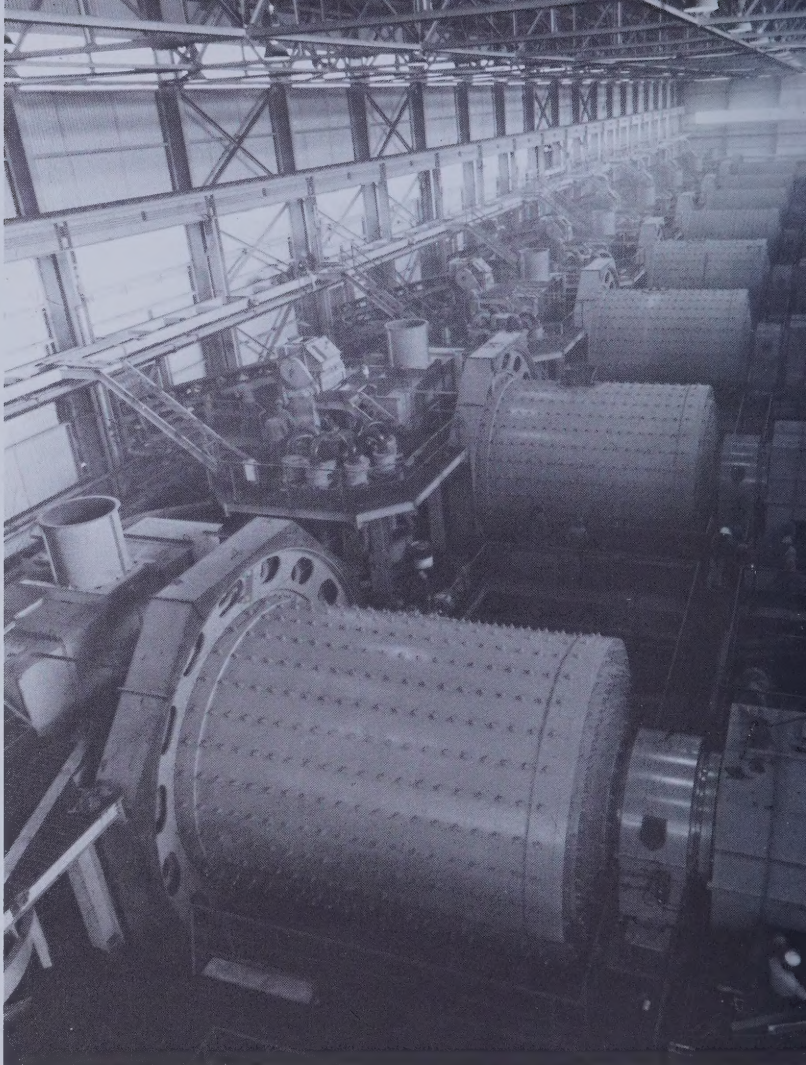
Developed, constructed, and equipped at a cost of more than \$1 billion, Toquepala and Cujone and their Ilo smelter will make SPCC the fifth largest copper producer in the Free World assuming that SPCC's annual production goal of approximately 300,000 short tons of blister copper is met, and that production levels of other producers are substantially the same as in 1976.



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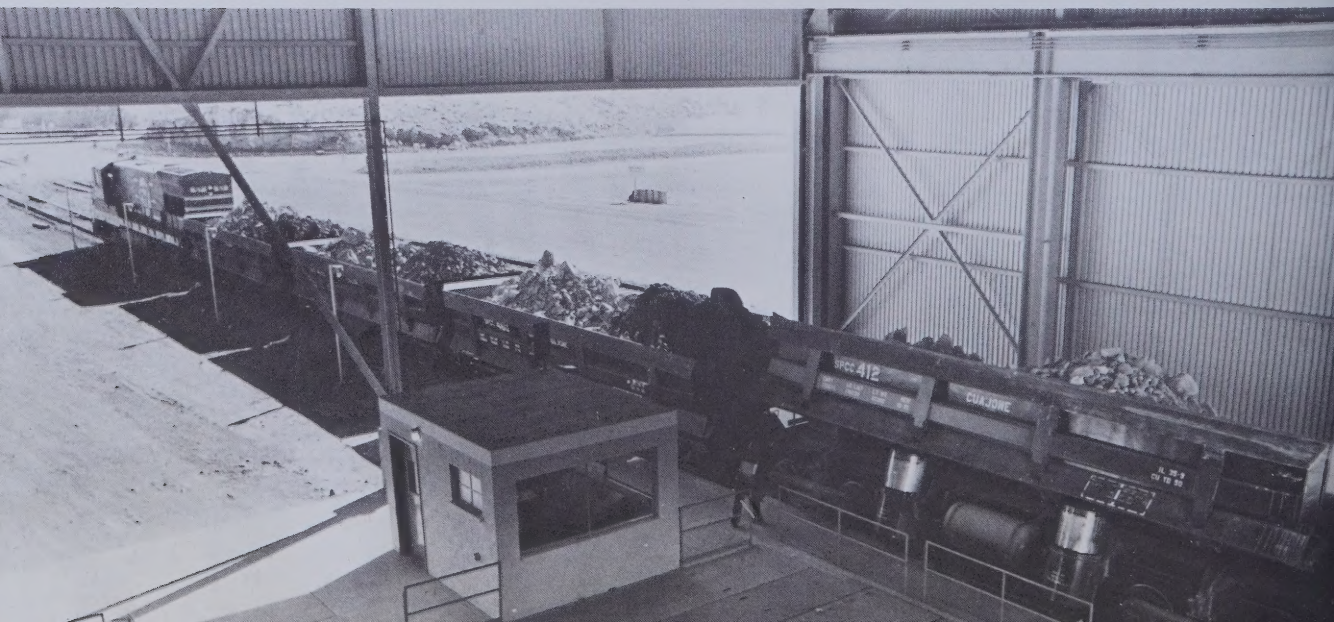
The \$726.8-million Cuajone project has been termed an epic in the field of mineral engineering. Consider:

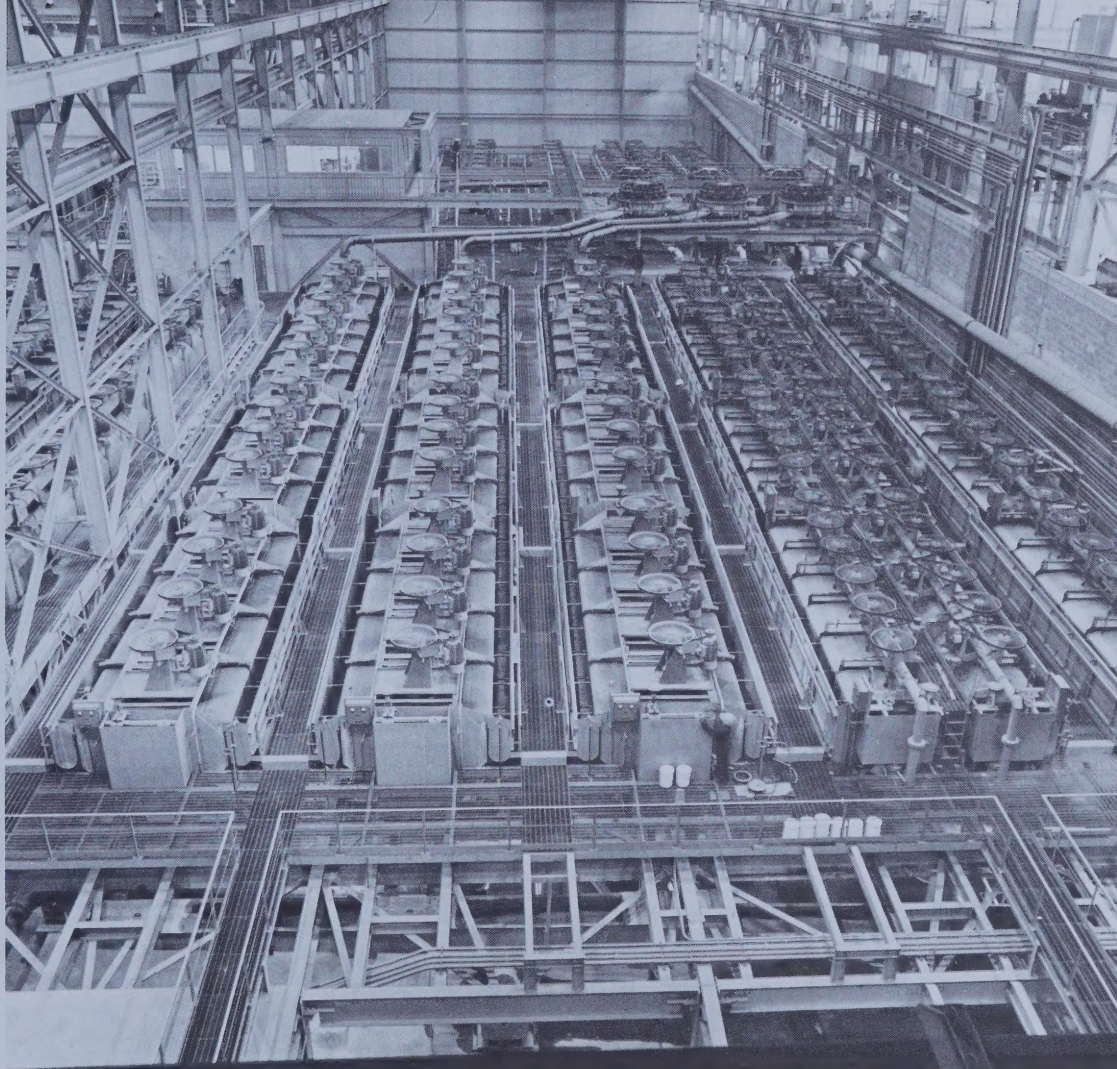
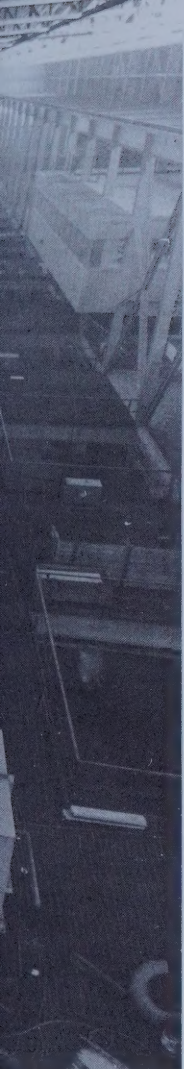
- Mine site preparation (removal of 240 million tons of overburden to expose the ore body).
- Construction of an ore concentrator and tailings pipeline (45,000-short-ton-per-day capacity).
- Expansion of the Ilo smelter (by approximately 180,000 short tons per year of blister copper).
- Construction of urban centers for approximately 1,800 employees plus their families (Villa Botiflaca and Villa Cuajone).
- Extension of the Ilo-Toquepala railroad to Cuajone (19 miles total of which 17 miles consists of five tunnels).
- Expansion of electric power supply (additional 66,000 kw installed; 72.5 miles of 138kv high line erected).
- Provision for water (developed new source from Titijones basin; expanded delivery from Lake Sucre with 30-mile pipeline; installed second sea water desalination plant at Ilo).
- Provision for telecommunications (automatic telephone systems, radio link with Lima installed).
- Setting up an internal and connecting road system (130 miles).



Cars with 75 tons of ore each from Cuajone are dumped at Botiflaca's primary crusher (below). Ten 11-car trains shuttle between mine and mill.

Eight 20-foot-long ball mills dominate Botiflaca's primary grinding bay (above). Concentrate is reground by four 17-foot ball mills (not shown).

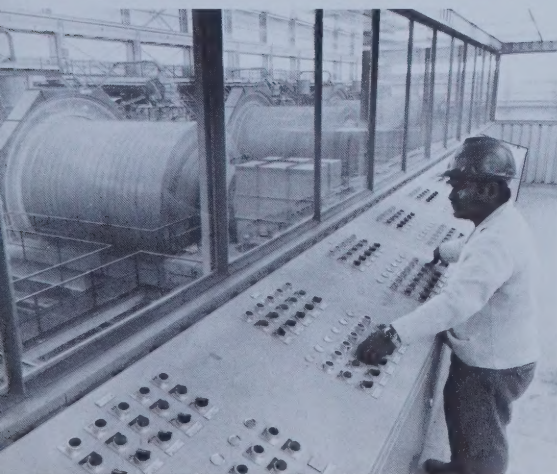




Mill is run from sophisticated control center (below). Progressive SPCC training program prepares Peruvians for supervisory and technical posts.

Ball-mill pulp is treated in sand rougher flotation circuit (132 cells in right three rows above) and slime rougher circuit (84 cells in left 3 rows).

Six diesel-electric engines, 50 100-ton cars are used to haul concentrates to Ilo (below). Trains pass through longest railway tunnel in South America.





Toquepala pit (above) has yielded approximately 2.3 million tons of copper in ore since 1960. Mine's proven ore reserves total about 225

million tons. Pit is about 6,560 feet east-west; 5,250 feet north-south; 1,675 feet deep. Western and northern sides are under development.

Equipped with 8 rod mills and 18 ball mills, Toquepala mill (below) treated 14 million tons of ore during 1976, recovered 126,700 tons of copper and



CONTINUED

Toquepala, Cuajone's older sister by 17 years, was perhaps even more of an engineering triumph. Because of the difficult accessibility of the area in which it is located, Toquepala was not recognized as a potential porphyry-type deposit until 1937. Situated at an elevation of an average 10,000 feet, it is about 60 air miles inland from the seacoast and 100 miles or so by road north of Tacna, the nearest sizeable city. Incredibly, 7,500 workers were able to prepare it for mining and build the mill and smelter in only four years at a cost of \$237 million. Originally designed for a daily capacity of 30,000 short

tons of ore, Toquepala later was expanded to its present 44,000-short-ton-per day capacity with an additional investment of \$50 million.

Cuajone, in fact, might not have been feasible today had it not been for Toquepala, 16 air miles southeast. Toquepala served as the model and provided much of its infrastructure: a 115-mile-long railroad to the coast; a similarly long tailings conduit; a 110-megawatt power plant; a water supply system; and a port at Ilo. In addition, a substantial number of Toquepala's 2,575-member work force formed the nucleus of trained personnel for Cuajone.



740 tons of molybdenum in concentrates. Ore trains approach mill area from east at extreme left. Track is on the same level as floor of mine.



Trucks and shovels load directly into trains inside Toquepala pit (above and below). As many as 10 levels are worked simultaneously. Ore trains

make up to 125 8-mile round trips between pit and mill daily. Trains also haul 27 million tons of waste and leach material from pit annually.

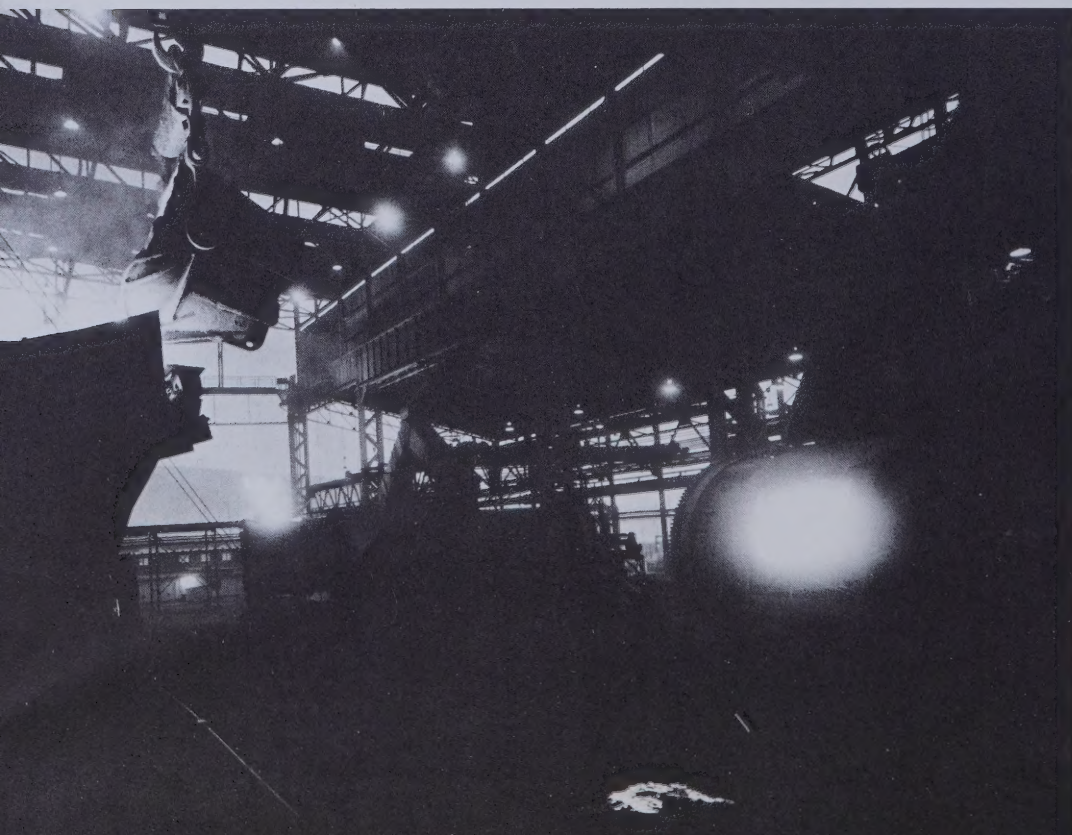


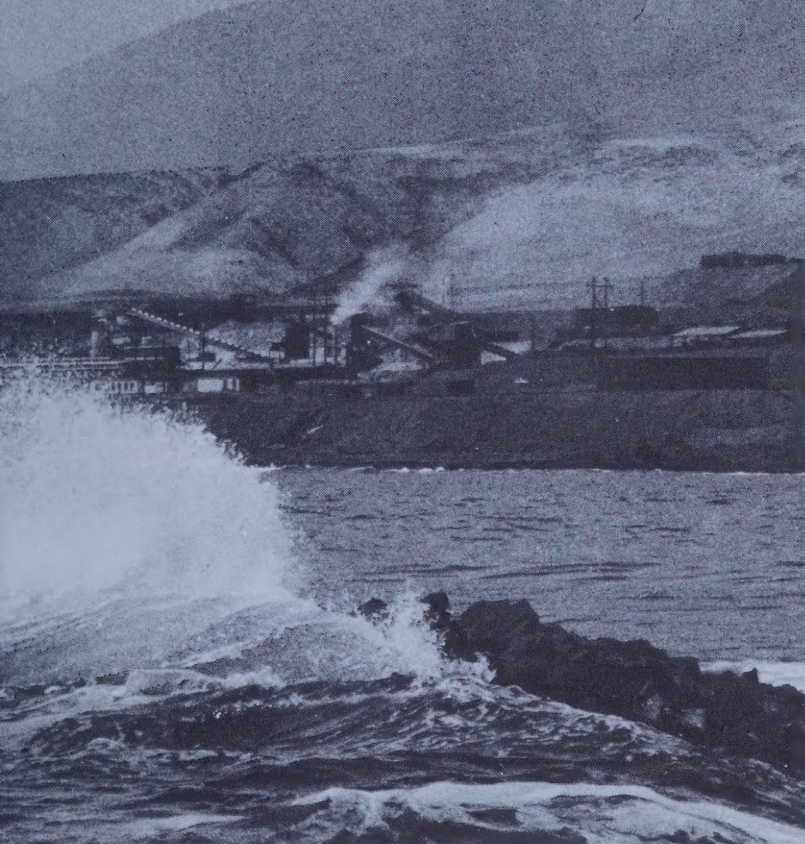


New section of smelter was added to north end (left above). Seaside stacks serving converters are 370 feet and 358 feet high respectively. Reverb

stacks are 365 feet and 342 feet high. Breaking wave masks generating and desalination plants seaside. Coquina calcining plant is at far right. Railroad

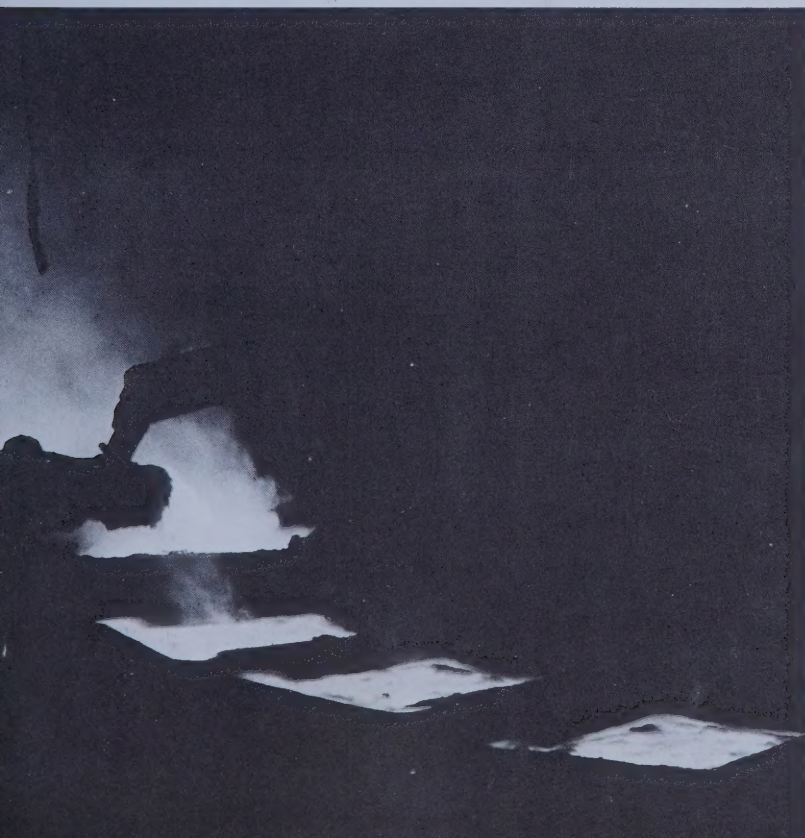
from Port of Ilo approaches from south (right). Two four-unit 30-car trains arrive daily with concentrate from Toquepala and Botiflaca mills.





Modifications to original section of smelter included enlarging capacity of four existing converters, increasing diameters of casting wheel to 29 feet.

Clam-shell bucket unloading installation was replaced by modern material handling system which conveys charge direct from bedding piles to reverbs.



CONTINUED

Technology for Ilo smelter came from three of its owners

Only three copper smelters in the world are larger than SPCC's Peruvian installation (left). Expanded to a charge capacity of one million short tons per year as part of the Cuajone project, it is exceeded only by smelters at Copper Cliff, Ontario; Noranda, Quebec; and Kitwe, Zambia.

Erected on an isolated stretch of Pacific Ocean beach at Punta Tablon, 10½ miles north of the Port of Ilo, it incorporated Asarco's Tacoma-type arches in its pair of reverberatory furnaces; reverb charging-slingers and silica patching system developed by Phelps Dodge; and Newmont's Magma material handling systems.

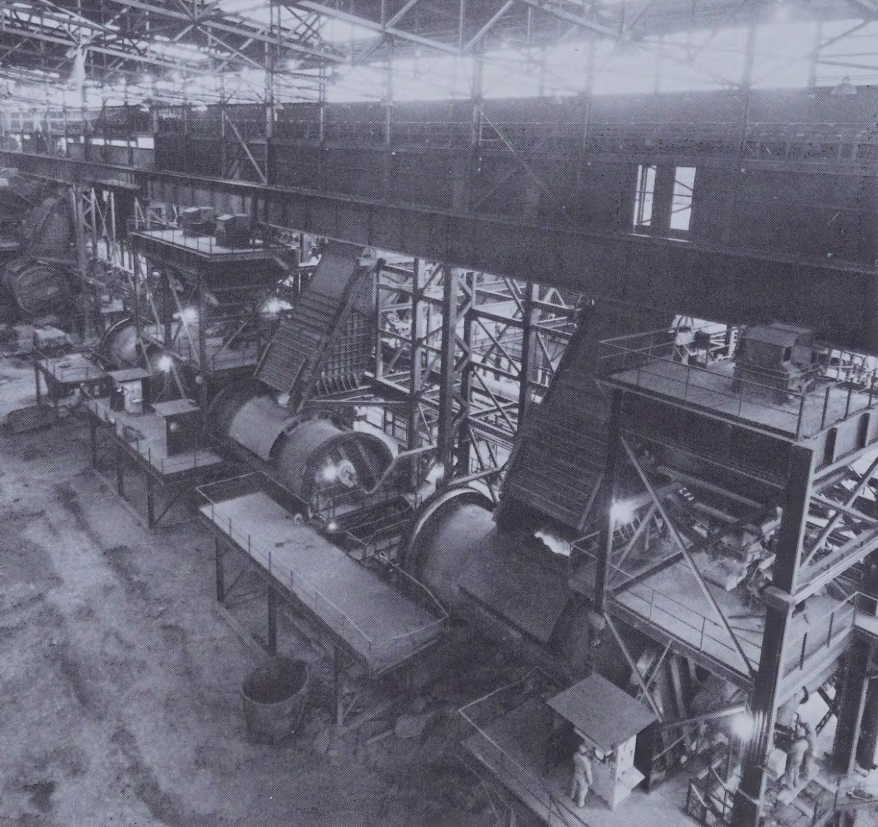
SPCC's chairman of the board, Frank W. Archibald, who came to Peru in 1958 with 18 years of Asarco smelter experience, was the plant's first superintendent.

Punta Tablon also became the sites of SPCC's sea water desalination plants, the power plant, lime kilns, repair shops, and warehouses.

The desalination plants produce approximately 1.7 million gallons of water per day for use by the smelter and Ciudad Nueva, a residential community built on the north side of Ilo for the smelter's 1,100 employees and their families.

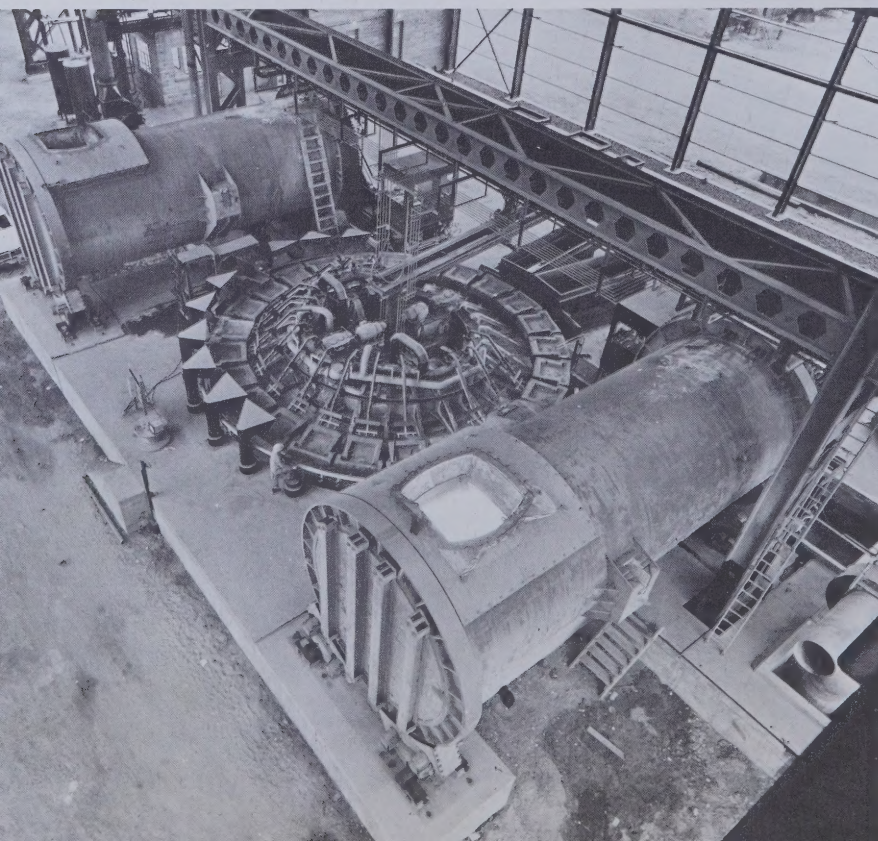
Most of SPCC's electric power is provided by the 110-megawatt steam generating plant at the smelter. More than half of the steam needed by its turbines, and all of that required by the desalination plants is provided by eight waste heat boilers attached to the smelter's four reverbs.

The kilns produce about 5,000 tons of lime per month from sea shells (*coquina*) which SPCC mines with a dragline from a nine-mile-long concession on the seashore about six miles south of Ilo. The lime is used by the Botiflaca and Toquepala concentrators as a reagent.



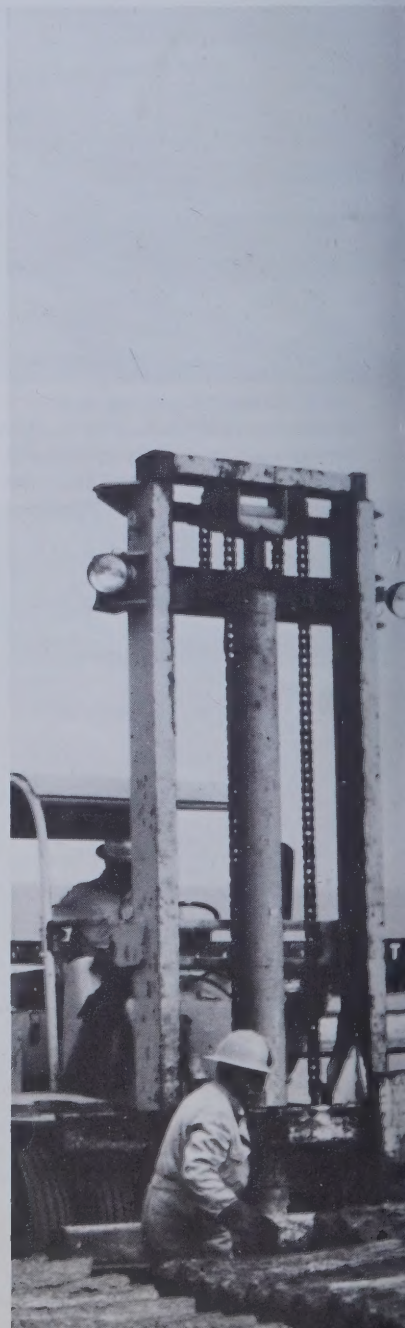
New section of smelter features two 36- by 116-foot side-charging reverbs (not shown), trio of 13- by 35-foot converters (above), and twin 36-foot

holding furnaces and 29-foot-diameter, 25-pocket casting wheel (below). Resulting 900-pound blister bars go to Ilo refinery or are exported.



CONTINUED

In 1957, a first order of business as SPCC set out on the monumental mine-mill-smelter construction task was to build the 600-foot-long steel and rock-fill pier below. It was vitally needed to replace lighters and landing craft which had to be used initially to carry heavy equipment and supplies from ship to shore. And, up until mid-1975, all of SPCC's finished



blister was exported from here.

Since then, however, under terms of a commercialization agreement with Peru, much of Toquepala's output is refined for SPCC at a new refinery at Ilo built by Empresa Minera del Peru (Minero Peru), an entity of the Peruvian government. The refined Toquepala copper is sold by SPCC to Minero Peru Comercial (MinPeco), an agency of the Peruvian government which sells the copper

on the world market.

In addition to the Toquepala blister, the Minero Peru refinery will refine a portion of the Cuajone production. The remaining Cuajone blister is exported. All Cuajone copper already has been sold by SPCC on medium and long-term contracts.

Besides serving as the export point, the Ilo pier, which can accommodate two vessels at the same time, continues to handle imports for Toque-

pala, Cuajone, and the smelter. About 400 tons of materials per day are hauled back up to the mines by returning concentrate trains.

Some 30 miles south of Ilo, off another lonely beach, mill tailings, transported by ditch and natural drainage, enter the sea. Special studies were made to determine methods of transport and routes which would not pollute agricultural lands or streams.



Unsafe is a dirty word at Asarco

Salt Lake City unit spearheads safety efforts

They cause extra work, get in the way, take up time — and almost always give the impression of not being happy. Yet they are inevitably welcomed by managers as they travel (as noted in Asarco's 1915 Annual Report) "from plant to plant... to provide every possible safeguard against accidents and to educate the employees on the

subject of preserving the safety not only of themselves but also of their fellow workmen."

"They" are Asarco's general safety engineers, presently Art Schaefer of Tucson and Bobby Jackson of Salt Lake City, and, frequently their supervisor, Rex Beckstead, director of Asarco's Department of Safety and Technical Employment.

Their mission is little changed from 1915. That is, to spot the unsafe condition, the unsafe act which others may not have noticed, and to cause it to be corrected.



Assuring safe exit from underground

Inspecting mine, Jackson observes daily cage check (left), hoist engineer's log (above), emergency exit map, and stench warning system (right). Stench (a garlic-like odor), re-

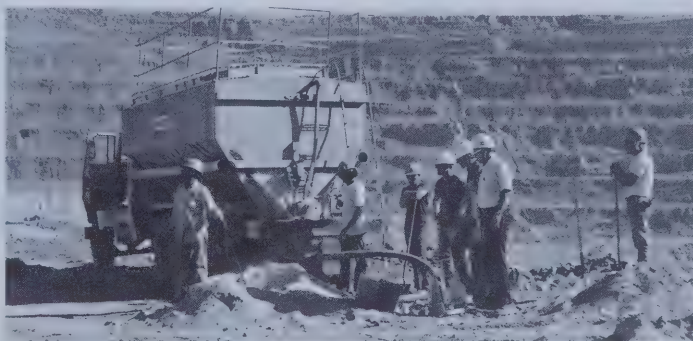
leased into mine's ventilation system by designated personnel and carried rapidly to work areas, is signal to evacuate. Ladders and auxiliary exits supplement hoist.



Monitoring fire prevention and fire-fighting procedures

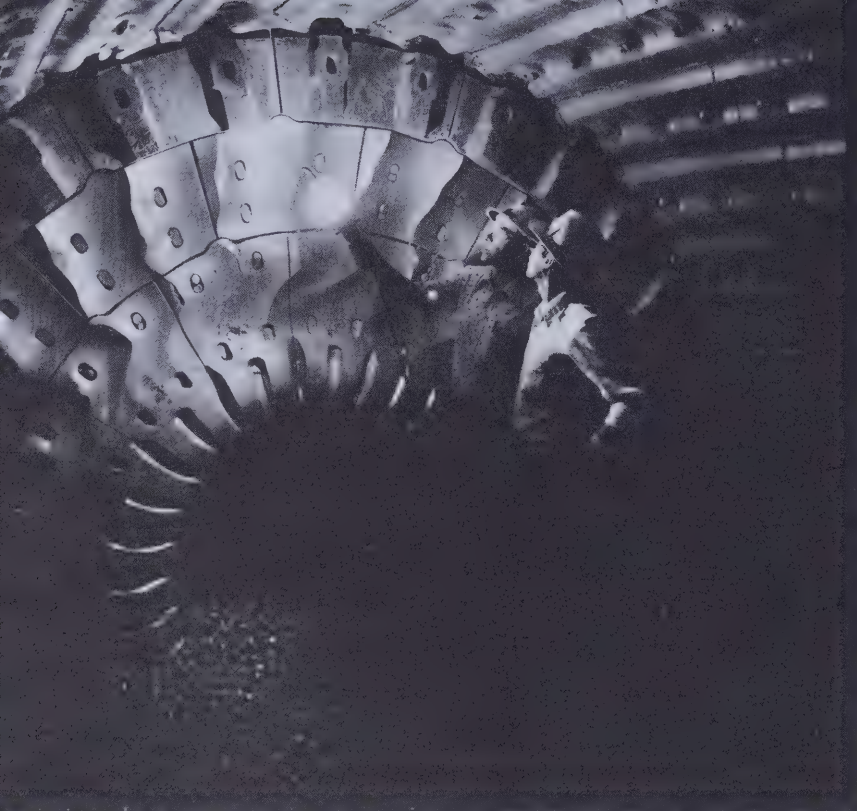
At left, Jackson checks fire extinguisher for full charge, type, and accessibility. Above, Schaefer (fourth from right) attends unannounced fire drill with unit's fire chief and safety engineer, notes use of foam unit as well as dust-control water truck to extinguish blaze. Apparatus ar-

rived within minutes after smoke was sighted, alarm given. All installations conduct fire drills periodically. Every employee has responsibility for good housekeeping, proper disposal and stowage of flammables, observation of no-smoking rules, and reporting smoke and fires.



Watching it done

Inspecting explosives handling, Schaefer (second from right above) observes crew loading drill hole for blasting. Warning is sounded, area cleared of personnel before shot is fired. At left, he checks tying of detonating cord which goes off in micro-seconds. (Underground fuse wire burns at rate of 40 seconds per foot.)



Verifying methods

Above, Schaefer observes use of 12-volt lighting during relining of interior of a ball mill to preclude electric shock, and, at left, checks lock-out system. Power cannot be turned on until last lock has been removed by last person working on that electrical circuit.



Looking out above

Left, Jackson checks for safety catch on crane hook. He and Schaefer check continually for required protective devices on hoists and cranes. Also to protect against hazards of falling material, rules prohibit working beneath loads unless blocked. Underground, 'loose ground' (overhead rock, usually) must be barred or blasted down or rockbolted in place.



Testing equipment

Above, Jackson examines worker's mask and fresh-air supply hose for type, fit, adjustment, and condition. Below, he tests emergency eye-wash station. Proper use of personal protective equipment helps prevent injuries and endangerment of health.





Observing repairs

At left, Schaefer looks for (and finds) brace under truck bed to protect mechanic working on transmission. At right, Jackson notes that lathe operator has machine stopped while work is being performed. Both men regularly visit maintenance shops.



Spotting the unsafe

At right, Jackson notes wheelbarrow with broken leg (a fresh eye is one of a visiting inspector's most valuable assets). All employees are expected to report broken ladders, platforms, equipment, etc., in order to help prevent accidents.



Checking safeguards

At left, Jackson spot-checks load-haul-dump unit underground for operator-safety devices. Below, Schaefer examines conveyor tripper which permits quick shut-off anywhere along line. Loose clothing and long hair increase chances of injury around machinery.



CONTINUED

According to the National Safety Council, accidents are the leading cause of death among persons aged 1 to 38, and are the fourth leading cause of death among all persons. And, in 1975, they cost the Nation \$41.1 billion in lost wages, medical expenses, insurance administrative costs, property damages, fire, loss, and indirect costs (around \$150 per U.S. citizen). Industrial accidents accounted for slightly more than 40 percent of the total (\$16.1 billion).

For these reasons if none other, Asarco's safety policies are established by the Company's highest executives. They embrace three areas: protection of the individual; protection of plant and equipment; and safeguarding property.

Foremost is protection of the individual. Besides the human suffering and misery they inflict, accidents take an awesome economic toll that eventually is borne by everyone.

Plant protection (the prevention or lessening of danger from fire, flooding, explosion, and Acts of God) comes under safety because it helps prevent indirect accidents.

Similarly, security of property is a safety function. For instance, many process chemicals as well as Asarco products are toxic and hazardous to handle; in untrained hands, they could cause death or severe injury.

Asarco's safety policies are implemented by Mr. Beckstead and his associates who draw up the rules and standards that meet federal, state and local regulations as well as Asarco's own *often stricter* requirements; guide plants and units in the formulation and administration of the local safety programs; and inspect every Asarco and Asarco-related installation in the United States, Canada, Nicaragua and Peru at least annually.

But any "after-the-fact" plans or actions are only secondary to prevention of accidents in the first place, says Mr. Beckstead. One of his syllogisms sums up his views: "Safety is a demanding mistress. You pay her now or you pay her later; if later at a ratio of 20 to 1."

General Safety Engineers Jackson and Schaefer and Mr. Beckstead go over accident reports and statistical summaries in agonizing detail to discover the reason why an accident or injury occurred. All too often, regrettably, accidents are found to be the results of unsafe acts rather than unsafe conditions. About 85 percent of all accidents are due to unsafe acts.

The department's analysis of the types of injuries sustained (sprains, bruises, burns, etc.), and the direct and indirect causes of accidents, becomes the basis for plant and unit safety rules. In addition statistics reveal which parts of the body are injured more frequently, assisting Mr. Beckstead and his associates in determining the need for protective clothing, hard hats, safety glasses, safety shoes and the like.

Mr. Beckstead and his group confer frequently with the National Safety Council, the National Fire Protection Association, the Mining Enforcement and Safety Administration (MESA), the Occupational Safety and Health Administration (OSHA), state safety agencies, the American Mining Congress and other industry associations. In addition, plant and unit safety personnel, individual supervisors, and employees often provide valuable suggestions.

Mr. Beckstead is convinced that established and well-enforced safety programs reduce accidents and injuries. Nevertheless, he gets depressed by two aspects of his department's work. Of particular concern is an inclination by some employees, especially newer ones, to take chances and to disregard safety rules. He is critical, too, of the growing amount of paper work required by government bureaus which not only is costly but also is counter-productive in that it reduces the time that he, the general safety engineers, and unit staffs can devote to their primary safety functions of preventing accidents and injuries.



During safety inspection, Schaefer (left, above) gets opinion of employee Arnold Mariscal. Others along

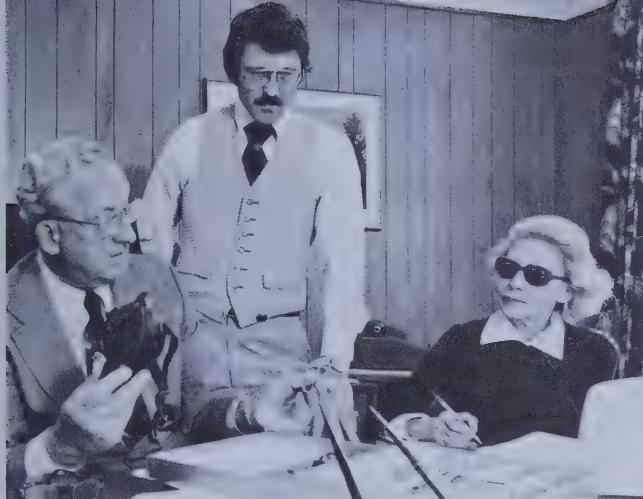
were Ed Ritter, Thomas Hayton, and Hayden's assistant personnel and safety director, Raymond Ochoa (right).



At exit interview above, Schaefer, discusses findings with Sacaton Unit's Superintendent Ed Calahan, Manager

Tom Edwards, and Safety Engineer Larry Hansen (far right). Schaefer uses a camera to illustrate safety points.





Beckstead and Jackson (above) evaluate suitability of respirator and safety glasses as Madge McGean takes notes.



Above, Beckstead and Environmental Sciences' Manager M. O. Varner coordinate hygiene and safety needs.



At left, Jackson sits in as MESA inspectors (left) brief Leadville's Gary Mosher (center) and Nelson King.

Safety features are incorporated during plant design stage or are retrofitted as called for. Above, Beckstead

and Central Engineering's A. O. Marsh, chief design engineer, go over modifications required by OSHA.

Where money goes

NET EARNINGS
AS A PERCENTAGE
OF TOTAL ASSETS

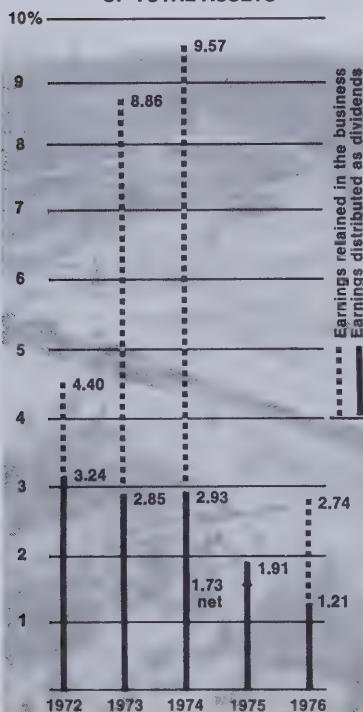


Chart above shows how Asarco's net earnings have fared as a percentage of assets. Broken line indicates portion retained; solid line shows dividends. After-tax earnings paid as dividends are taxable again as income.

In 1976, Asarco's gross revenue from sales of products and services, equity in earnings of nonconsolidated associated companies, and other income

In March, Asarco published its 77th Annual Report. In it, the Board of Directors accounts to the stockholders for the performance of the Company during the preceding year. Illustrated here are aspects of the year's results as derived from the Annual Report.

As a business enterprise with its capital stock owned (at year-end) by 56,856 people, Asarco is a component of the private sector of the Nation's economy. It is the private sector that produces most of the goods and serv-

ices that provide and help improve the American standard of living. The private sector provides five out of six jobs in the United States.

To these ends, the private sector must earn sufficient money to attract and retain stockholders, to invest and expand, and to pay through taxes for the expenses of the public sector (government) which—for the most part—does not and indeed cannot produce capital.

This year, stockholders received 70 cents a share as dividends. For the stockholder who bought stock at 13½ on January 2, 1976 (the first trading day of the year), this is equivalent to a return on investment of 5.2 percent.

Capital is created by the investment of money by the private sector. New investment means jobs, jobs mean sales, sales mean money, and so on.



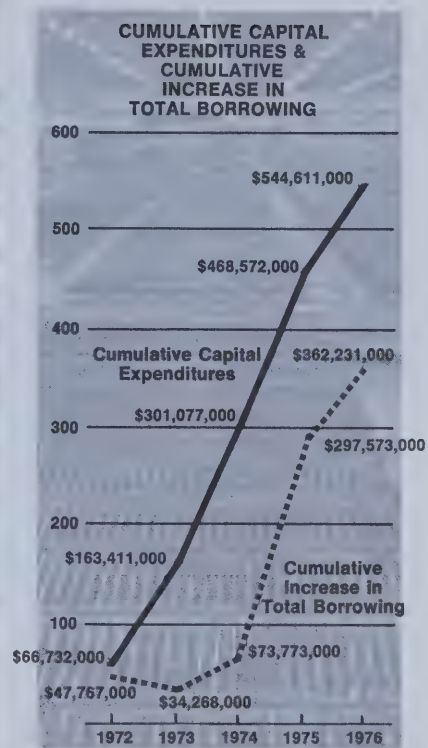
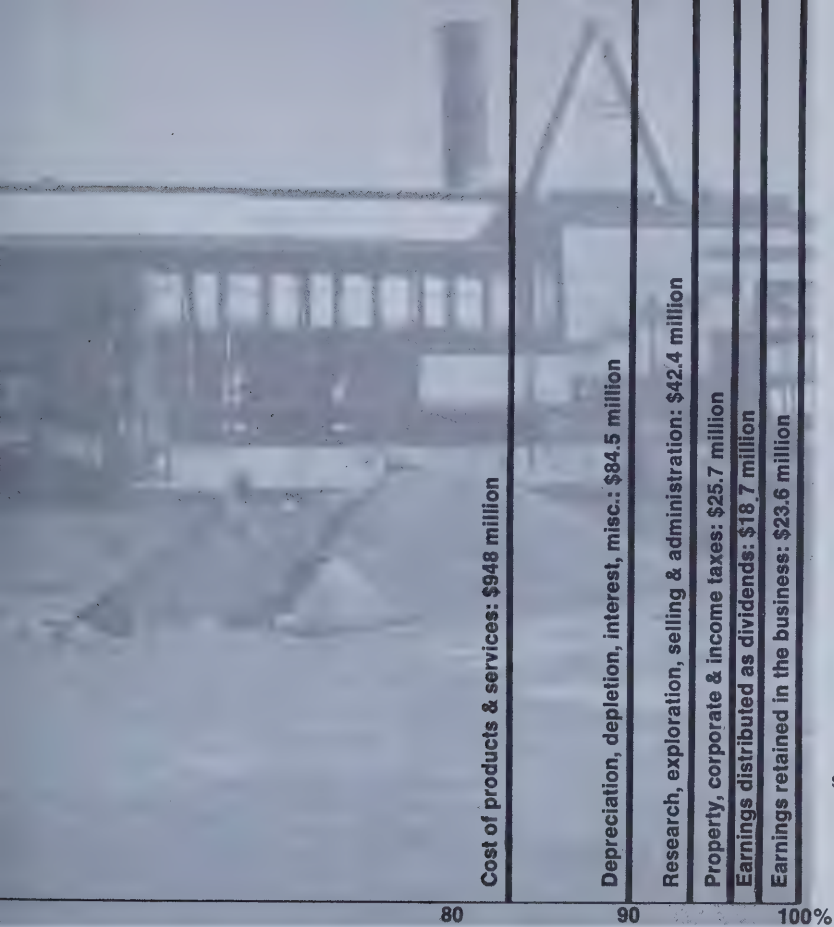


Chart above compares capital spending and increase in total borrowing on a cumulative basis. Although earnings available for reinvestment were lower, Asarco met commitments to major capital projects by borrowing.

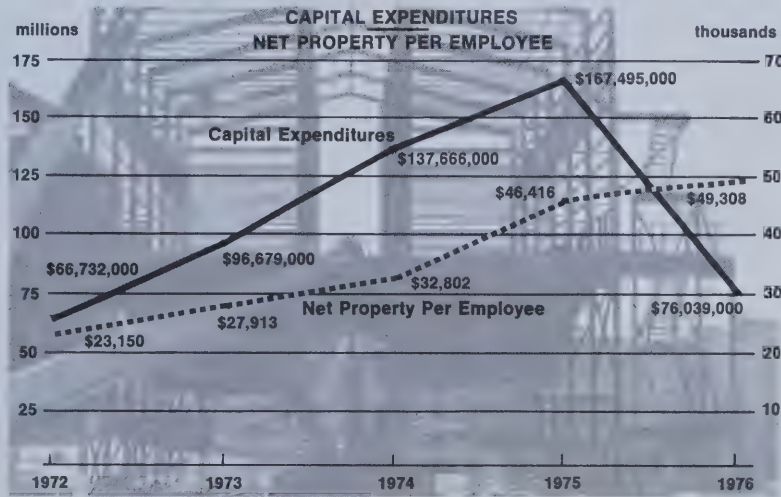
Asarco also pays other taxes such as payroll, sales, and severance to municipalities, states, and other jurisdictions (absorbed in 'Costs of products

and services') and share of taxes paid by nonconsolidated associated companies. Only 4 percent remained for dividends and retention by company.

An enterprise can spend only what it can earn or finance by borrowing in anticipation of earnings. The high rate of inflation of recent years has made each dollar of earnings worth less in real purchasing power to provide new plants and equipment.

The money Asarco earns depends largely on what it receives for its minerals and metals at international prices, and which are beyond its or anyone else's control and vary a great deal over a relatively short time span. Lead, for example, was 19 cents a pound at the beginning of 1976; 29 cents a pound in February 1977.

Many Asarco employees, themselves stockholders, already have received copies of the 1976 Annual Report. Any employee may obtain a copy of this year's annual report by writing The Editor, Asarco News.



Capital expenditures of \$76 million in 1976 went for environmental improvements, new production facilities

and completion of the Amarillo copper refinery. Net property rose to equivalent of \$49,308 per employee.

ASARCO BRIEFS

Federated Metals to acquire certain Perth Amboy facilities

PERTH AMBOY, N.J. — The continuous-cast copper alloy and lead products plants, long a part of Asarco's Perth Amboy copper refinery, will be acquired by Federated Metals Corporation as of April 1, 1977. These facilities will be operated as a separate division of Federated Metals.

The continuous-cast plant pioneered the vertical gravity feed method of casting in 1945, and today manufactures a complete line of continuous-cast alloys in rods, tubes, and special shapes.

The lead products plant includes a modern rolling mill and extrusion presses. Its products include lead sheet, pipe, bricks, and wool for use in the chemical process and construction industries.

Remaining portions of the Perth Amboy plant will be dismantled and the property sold. Copper scrap and precious metal scrap purchasing operations, which had been continued on a trial basis following phasing out of copper refining operations in March 1976, did not prove viable and have been discontinued.

Asarco, Cominco and NL join in Kentucky exploration project

NEW YORK — Asarco, Cominco American and NL Industries have agreed to formation of a joint venture to investigate the underground details of zinc mineralization near Burkesville, Kentucky.

Cominco American and NL Industries have had a joint exploration program in the area since 1970; Asarco has conducted an exploration program on adjoining property for several years. Each of the joint venture partners has designated a portion of the land under its control to be included in a unitized area. Cominco American has been appointed joint venture manager. The underground project to be undertaken in the unitized area will take approximately three years to complete.

SPCC names Josephson vice president-operations

TOQUEPALA, Peru — Morris R. Josephson has been appointed vice president-operations for Southern Peru Copper Corporation.

A native of Ironwood, Mich., Mr. Josephson, 57, has spent his entire professional career in South America. He joined SPCC in 1961 as assistant mechanical superintendent at its then newly opened Toquepala operation, and advanced through a number of management positions, the most recent of which was general manager-operations. Mr. Josephson was graduated from Michigan Technological University with a B.S. degree in mechanical engineering in 1949.

Whitley elected president of CAPCO

BIRMINGHAM, Ala. — Warren T. Whitley, 53, has been elected president and chief executive officer of Cement Asbestos Products Company (CAPCO) with office at CAPCO headquarters in Birmingham.

CAPCO, an Asarco subsidiary, manufactures asbestos-cement pipe at plants in Ragland, Ala., and Van Buren, Ark.

Mr. Whitley, treasurer of Leonard J. Buck and Co. since 1975, joined Asarco originally in 1956 as a credit representative in New York City, and, following a series of promotions in the Credit Department, was appointed assistant treasurer in 1969.



THE WAY IT WAS

High in the Peruvian Andes in the early 1900s, Lester W. Strauss (right) and his bride of a few months, the former Bertha Miller of Plattsburgh, N.Y., press on in a search for lead-silver deposits. The Strauss' were to become the parents of Asarco's executive vice president, Simon D. Strauss, who was born in Lima, Peru, on July 24, 1911. On a subsequent exploration journey in Chile to examine nitrate deposits, 3-year-old Simon went along (barely visible on his mother's lap in the carriage below).



Milestones

Victor Barua R., 52, previously superintendent, Cuajone mine, Southern Peru Copper Corporation: promoted to manager, Cuajone Area. Mr. Barua, who originally joined Asarco in 1947 as a shift foreman at Northern Peru Mining Corporation's Quiruvilca mine, joined SPCC in 1956 as mine geologist at the Toquepala mine.

Peter Buchholz, 39, previously assistant sales manager, Lake Asbestos of Quebec, Black Lake, Quebec: promoted to sales manager.

John T. Devere, 33, previously superintendent, Allendale mine, Midland Coal Company, Wyoming, Ill.: appointed general manager-operations, Trivoli, Ill. Mr. Devere joined Midland in 1974 as chief engineer.

Edward A. Farrell, 57, previously sales manager, Lake Asbestos of Quebec, New York: promoted to director of sales.

John Fear, 54, previously industrial engineering supervisor, Certain-teed Products Corp., St. Louis: named plant industrial engineer, Cement Asbestos Products Company, Van Buren, Ark.

Tom J. Findley, Jr., 29, previously chief accountant, Manchester Unit, Manchester, N. J.: named assistant accounting manager, Midland Coal Company, Trivoli, Ill.

K. M. Finlay, formerly general manager, Mount Isa Mines, Ltd., Mount Isa, Australia: appointed assistant to the vice president-mining, Asarco Tucson, responsible for the development of proposed new underground mining properties in the western United States.

Richard H. Funke, 55, previously manager, Baltimore Plant: appointed assistant to vice president-smelting and refining. Mr. Funke, who joined Asarco in 1946 as an engineer will be overall coordinator of maintenance for the Smelting and Refining Department. His new office is in Washington, D.C.

Robert D. Gilstrap, 38, previously superintendent, Elm mine, Midland Coal Company, Trivoli, Illinois: promoted to general superintendent, Midland Coal Company, Trivoli. Mr. Gilstrap joined a Midland predecessor in 1961.

James M. Henderson, 55, previously research superintendent, chemical engineering, Central Research Department, South Plainfield, N. J.: pro-

moted to general superintendent-process research.

Scott Latimer, 39, formerly ore buyer, New York: promoted to assistant manager, Ore Department, New York. Mr. Latimer joined Asarco as a metallurgist at Tacoma in 1966.

William H. Machie, 55, previously superintendent, Ilo smelter, Southern Peru Copper Corporation: promoted to manager, Ilo Area. Mr. Machie joined Asarco in 1948 at the former Selby plant in Crockett, Calif., and was employed subsequently at Hayden, El Paso and Monterrey plants prior to joining SPCC in 1963.

Michael J. Messel, president, Lake Asbestos of Quebec, Black Lake, Quebec: elected to the additional post of chairman of the board, Cement Asbestos Products Company, Birmingham, Ala., succeeding William R. Bond, who retired.

Joseph J. Pigeon, 51, formerly manager, Southwestern Department, Federated Metals Corporation, Houston: promoted to general manager, Midwestern Department, Whiting, Ind., succeeding Louis D. Alpert, who retired (see separate story). Mr. Pigeon joined Federated Metals at the Whiting Plant in 1948.

Charles G. Preble, 44, previously superintendent, Toquepala mine, Southern Peru Copper Corporation: promoted to manager, Toquepala Area. Mr. Preble, who was employed by Asarco in 1956 as a mining engineer at Silver Bell, Arizona, and joined SPCC in 1965.

Robert S. Ray, 37, previously assistant manager, Southwestern Department, Federated Metals Corporation, Houston: promoted to general manager, succeeding Joseph J. Pigeon (see above). Mr. Ray joined Federated Metals in 1963 as a laboratory assistant at Sand Springs, Oklahoma.

Richard P. Ruby, 43, formerly international counsel, Asarco, New York City: appointed assistant vice president, Southern Peru Copper Corporation, Lima. Mr. Ruby joined Asarco in 1973.

Charles R. Sutherland, previously member sales staff, Midland Coal Company, Peoria: promoted to district manager-sales, Peoria. Mr. Sutherland joined Midland in 1952.

Arlen L. Walters, formerly assistant superintendent, Elm mine, Midland Coal Company, Trivoli, Ill.: promoted to superintendent, Elm mine. Mr. Walters joined a Midland predecessor company in 1967.



General La Torre Di Tolla (l.) decorating SPCC's Frank W. Archibald.

Archibald decorated by Peru for distinguished service

CUAJONE, Peru — The Order of Merit for Distinguished Service to Peru was presented here recently to Frank W. Archibald, chairman and president of Southern Peru Copper Corporation. Mr. Archibald was designated a "Knight Commander" of the Order of the Revolutionary Government of the Armed Forces which authorized the high honor.

Brigadier General Arturo La Torre Di Tolla, Peru's Minister of Energy and Mines, who decorated Mr. Archibald, said that by its action the Peruvian Government was recognizing Mr. Archibald's efforts in making Cuajone a reality.

Also decorated were Ing. (engineer) Victor Barua, SPCC manager of the Cuajone Area; Ing. Cesar Serpa; and Oscar Basadre and Hugo Valdivia Pinto, workers at Cuajone. Each was designated an Officer of the Order.

Earlier, Mr. Archibald was decorated by the City of Tacna, Peru, also for distinguished service. Mr. Archibald was presented with a medal at ceremonies honoring the 47th anniversary of Tacna's incorporation.

Newsmakers

David P. Caldwell, manager, Salt Lake Division, Exploration Department, Salt Lake City: named member of the board of directors, Utah Mining Association.

Ralph L. Hennebach, president, Asarco, New York: conferred Corporate Leadership Award by The Massachusetts Institute of Technology. Mr. Hennebach was among M.I.T. alumni who received the award which "hon-

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ors individuals whose responsibilities in private industry mark them as exceptional contributors to the strength and well-being of this nation."

Stanley O. Holdman, district traffic manager, Traffic Department, St. Louis: elected third vice president, Traffic Club of St. Louis.

Arnold Mariscal, machinist, Hayden (Arizona) plant: named Citizen of the Year by the Hayden-Winkelman Chamber of Commerce. Mr. Mariscal, 33, started at the plant as a laborer in 1962 (see separate item).

Frank L. Merwin, vice president-traffic, Asarco, New York: elected to the board of directors, Transportation Association of America.

Michael J. Messel, president, Lake Asbestos of Quebec, Black Lake, Quebec: elected president, Quebec Asbestos Manufacturers Association.

Ronald J. Ohm, northern regional sales manager, zinc oxide, Columbus: served as chairman of the 10th annual camp of Camp Enterprise, sponsored by Columbus Rotary Club to promote free enterprise concepts.

William B. Sansom, president, American Limestone Company, Knoxville: elected vice president, Greater Knoxville Area Chamber of Commerce.

Bernard R. Schmidt, cathodic protection sales engineer, Federated Metals Corporation, Somerville, N. J.: elected chairman, Metropolitan New York Section, National Association of Corrosion Engineers.

Douglas H. Soutar, vice president-industrial relations and personnel, Asarco, New York: presented Award of Merit by the New York Personnel Management Association in recognition of "significant achievements and long-term contributions in the field of personnel/industrial relations management." It is the first time the award has been presented since 1968 when it went to the late Whitney M. Young, Jr., executive director of the National Urban League.

H. Kenneth Spaulding, manager, Amarillo Copper Refinery, Amarillo: elected director, Amarillo Chamber of Commerce. Mr. Spaulding also made news by becoming the 1,000th stockholder of The First National Bank of Amarillo.

I. Lee Taylor, vice president-marketing and sales, Cement Asbestos Products Company, Birmingham: elected chairman of the board of di-

rectors of the Association of Asbestos Cement Pipe Producers.

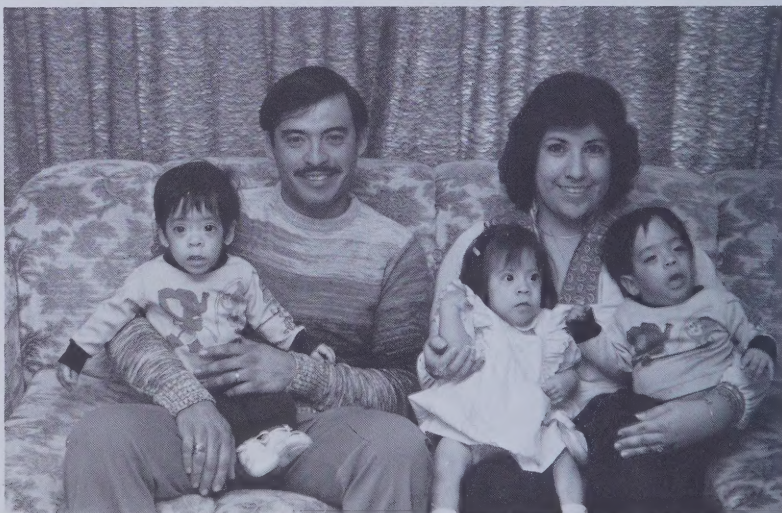
Mission employee celebrates triplets' first birthday

TUCSON — A year ago, Patricia Ann and Jose Luis Gomez were sick with worry. Nurses and doctors at Tucson Medical Center were equally concerned. On December 31, 1975, Mrs. Gomez had delivered premature triplets, two boys and a girl, weighing a mere 2 pounds each. For more than 12 weeks it was touch and go for the

infants, struggling for life in incubators in the hospital's intensive care unit.

Finally, by the time the Gomez' took the triplets home, one a week for three weeks, doctor, medical and hospital bills reached a staggering \$64,000.

Now the triplets, (Jose Junior, Jeffrey, and Julie Ann) largely have overcome their respiratory problems with which they were born, and are the picture of health (see photo). On their first birthday, each weighed 18 pounds. All but \$500 of the triplets'



Parents Jose and Patricia Ann Gomez and (l. to r.) Joey Jr., Julie Ann, and Jeffrey.



IN RECOGNITION OF SAFETY ACHIEVEMENT

For achieving 40 years of accident-free service, Hillsboro (Ill.) employees Bryce Hall and Andy Eskra (center, left and right) have received framed Certificates of Honor from the Joseph A. Holmes Safety Association. Making the presentation recently were Oscar J. Hassel, general superintendent (left), and Harry Payne, personnel and safety director (far right). Mr. Hall, who has retired, worked as a laborer, bagshaker, furnaceman, furnace fireman, and foreman; Mr. Eskra has been a crane operator and truck driver.

medical expenses, about \$63,500, was paid by the Asarco Health Plan.

Mr. Gomez, 25, has been employed as a heavy truck driver at the Mission Unit since his discharge from the U.S. Marine Corps in March 1972. Mrs. Gomez, 21, is the daughter of a retired U.S. airman, Stephen B. Cruz of Tucson, and worked as a nurse's aide at St. Mary's Hospital until shortly before the triplets were born. They are the Gomez' first children.

"Except for changing 230 diapers every week, the worst seems to be behind us," Mr. Gomez says.

Federated Metals' Lou Alpert retires

WHITING, Ind. — Louis D. Alpert, vice president of Federated Metals Corporation, has retired.

A native of Boston, Mass., Mr. Alpert joined Asarco as a research metallurgist in Perth Amboy, N. J., in 1935 shortly after receiving his M.S. degree in metallurgy from M.I.T.

Mr. Alpert transferred to the Federated Metals plant in Whiting later in 1935 and was promoted to superintendent of the brass foundry the

following year. He served as traveling superintendent of all Federated Metals plants in the Midwest in 1941 and 1942, when he was promoted to superintendent of the San Francisco, Calif., plant. He was promoted successively to assistant to the Pacific Coast manager; assistant manager and manager of the Los Angeles plant; and general manager of the Newark, N. J., plant. He returned to Whiting in 1959 as general manager of the Whiting plant, was promoted to general manager of the Midwestern Department, headquartered in Whiting, in 1963, and was promoted to vice president in 1976.

Mr. Alpert is married to the former Beatrice Miller of Chicago.

Ed Ostrander, Federated Metals veteran, retires

NEWARK, N. J. — Edward W. Ostrander, supervisor of the sales order department at the Newark Plant of Federated Metals Corporation, has retired with 47 years of service. Mr. Ostrander joined the New York office of the original Federated Metals Corporation in 1932 prior to its acquisition by Asarco later that year. Mr. Ostrander assisted in sales in the metropolitan New York City area and later was transferred to Perth Amboy, N.J., where he was responsible for production scheduling and inventory control. In 1953, he was transferred to the Newark office to supervise the sales order department as well as serve customers in the foundry industry. Mr. Ostrander and his wife, Helen, live in Old Bridge, N.J.

Frank J. Peiser

BAYSIDE, N.Y. — Frank J. Peiser, comptroller of Southern Peru Copper Corporation in New York City, died December 15. He was 49.

Mr. Peiser joined Southern Peru in 1956 as chief accountant and was appointed comptroller in 1975. Earlier, he had been employed by Asarco.

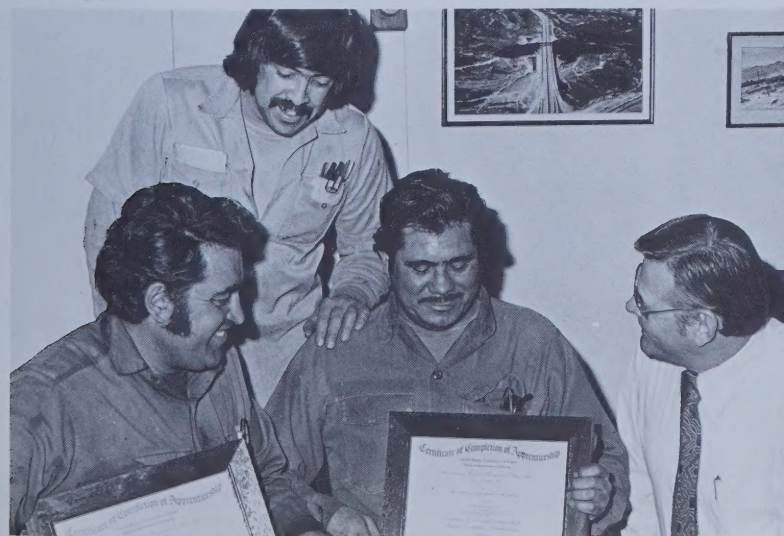
A native of New York City, Mr. Peiser was a graduate of St. Peter's College in Jersey City where he received a bachelor of science degree in accounting. He was an active participant in community affairs, Little League baseball, the Boy's Club of America, and church athletic programs for many years.

Mr. Peiser is survived by his widow, the former Elena Hoegberg of New York City, seven sons and a daughter.



THE GRADUATES

Four-year apprenticeship programs, involving 8,000 hours of on-the-job-training and four years of academic study with International Correspondence School, are over for five Asarco employees at Hayden, Arizona, and El Paso, Texas. Above, with their diplomas, are Hayden's Joe Kerlock, boilermaker; Arnold Mariscal, machinist; and John Ruiz, brick mason; below are El Paso's Luis Labrado, pipefitter, and Guillermo Sanchez, boilermaker. Congratulating the El Paso pair are Frank Ortega, chairman of the Joint Apprenticeship Committee (standing), and Ed Brodka, El Paso Plant's maintenance superintendent.



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COVER: Earth fill (foreground) provides access between south (left) and north faces of SPCC's Cuajone mine 12,000 feet high in the Andes of Peru. Open pit, which actually is a canyon, is 6,500 feet wide and more than 2,500 feet deep. Railroad to concentrator is at floor of pit, swings westward through saddle of both faces on way to Botiflaca.

PHOTO CREDITS: Cover-9 William J. Haddon, Norton Pearl, and James H. Pickerell; Pages 10-15 Bruce McAllister, Dave Davis, John Zimmerman, and Hal Rumel; 16-17 Zimmerman, John Lewis Stage, Pearl, and Roy Laing.



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SPCC'S CUAJONE MINE

With more than 240 million tons of overburden removed to expose its 470-million-ton ore body, Cuajone ranks as one of the largest earth-moving projects in the world. The Cuajone project, a joint venture of SPCC (approximately 89 percent) and Billiton, B. V. (approximately 11 percent) was completed in 6½ years of work in accordance with a bilateral

agreement between SPCC and the Supreme Government of Peru. The mine, which was opened formally last November by the President of Peru, General Francisco Morales Bermudez, reached full production capacity in the first quarter of 1977. During its first full year, Cuajone could increase Peru's copper production by approximately 80 percent.

